WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Upper Caribou Creek Mini-grid

17 – 26 June and 21- 22 July, 2009

Figure 1. Dave doing a hand-stand between points 12 and 7

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August, 2009

PURPOSE:

The purpose of this trip was to establish and measure vegetation and soil attributes of 25 permanent plots for vegetation monitoring at the Upper Caribou mini-grid according to the Central Alaska Network (CAKN) vegetation monitoring protocols (see Roland *et al*. 2005). We sampled twenty-four of the twenty-five points. Point 3 was not sampled because it falls in the center of the Nabesna Road. Since point 1 is located on the edge of a lake, we only sampled the terrestrial half of this plot. Next time the full plot should be sampled and crew should come prepared to wade into the lake strand vegetation. Four of the sampled points (including plot 1) were completed in July when we had extra time after finishing the Boyden Hills mini-grid.

PERSONNEL:

Fleur Nicklen - crew leader, vascular composition, plot/quadrat variable estimates, transects
Dave Kofranek - non-vascular collections/id, soils data
Brandon Gottung – plot photos, tree and sapling data, tree cores, transect data

ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:

The Upper Caribou Mini-grid is located right off the Nabesna Rd about 20 miles from the Slana Ranger Station and can be accessed by driving and hiking. It is about a 2.5 hour drive from Copper Center. Two points of the mini-grid fall on the south side of the road, point 3 is in the road, and the remaining 22 points are north of the road. A popular trail in the park, Caribou Creek Trail, starts at mile 19.5 on the Nabesna Rd. The trailhead is located approximately between points 5 and 10 and the trail heads north up the drainage just west of the Caribou Creek drainage. The two western columns of the mini-grid generally straddle the trail, though both points 24 and 25 are west of the trail.

There are two ways to get to good camping at this mini-grid. If you walk past the trailhead about 1km east you will come to the actual Caribou Creek crossing, which will be obvious with all the river rocks from flooding events surrounding alder and trees. Hiking up this creek a little way you will find some good open gravel/rock bars for camping and good water. The vegetation on either side of the creek is rather thick alder. The downside to camping right on the creek is that you will have poor visibility and have to bushwhack through the alder each morning and evening. The upside is having a reliable water source. Camping in the center of this mini-grid for hiking purposes is not completely necessary as there is only about 400 ft. of elevation change across the 25 points.

We chose to hike up the trail and then cut east to find camping near some water. Before we left Copper Center Brandon and I filled our personal backpacks with sampling gear and bear barrels. Once we got to Slana, we borrowed one of Mike Thompson's backpacks and filled that as well. With six large backpacks we still could not fit everything we needed into the packs and each of us had to carry several items in our arms. We found a nice open meadow between points 14 and 19 with a small boggy pond that supplied us with good water (Figure 2). Next to our cook tent was a small drainage (one of many fanning out of Caribou Creek) that would temporarily fill with water after rain.

Figure 2. Looking NE to our camp at Upper Caribou mini-grid, between points 14 and 19.

It is also possible a crew could stay at the Freed Cabin and commute to the mini-grid. Though over ten days the time to commute to and from the site would probably outweigh the time saved by not hiking in and out with gear and setting up and taking down camp and the time walking between bear barrels, tents, and cooking area. A new cabin was built this year 3.5 miles up the trail from the mini-grid. This is too far to be a feasible camping possibility.

HIKING:

Hiking within the Upper Caribou mini-grid is fairly easy. There is only about 400 ft of elevation change within the mini-grid and the topography is simple with one gentle SW facing slope dominating the landscape. The only challenge is the thicker vegetation (alder and willow) around the creek drainages, particularly the main drainage that bisects the mini-grid. There are also some thick patches of *Betula occidentalis* near point 22. The trail and road make for fast walking and sometimes it is better to deviate from a straight path to utilize the trail or road. There are a several tussock bogs, but they are mostly dry and not too bad to cross.

WEATHER AND ENVIRONMENTAL CONDITIONS:

We experienced particularly chilly and damp weather throughout our sampling trip. We had some precipitation 9 out of 10 days, with substantial rain on 6 of the days. It was close to freezing nearly every night. It typically warmed up into the mid-fifties during the day and was prime weather for mosquitoes and white-socks. On days 7 and 8 we had a mix of rain, sleet, hail and snow in the morning with temperatures hovering around 33-34° F. Day 9 was clear and warm, but during the evening it turned cold again and rained very hard. On the morning of day 10 the cold rain turned to sleet and then 4 inches of snow (Figure 3)!

Figure 3. Snow on day 10 of the Upper Caribou sampling trip.

SAFETY CONSIDERATIONS:

There are few safety hazards at this mini-grid. The hiking is quite safe, with only a few modest tussock areas where one could twist a knee or ankle. Crossing the main channel of Caribou Creek was quite easy while we were there, but it is possible the creek could be higher and pose some danger. We saw very little evidence of bears.

The greatest danger we faced at Upper Caribou was the cold and wet. We were often cold at night in our sleeping bags. On day 7, when it was sleeting and 33° F and we were sampling a thick alder/willow plot, Brandon began to feel 'odd' and he thought he was overheating in his wool sweater. Luckily he warmed up coring a tree and the day got progressively warmer as well.

PHENOLOGY OBSERVATIONS:

The vegetation at Upper Caribou varied among spruce forests (often in old or ephemeral stream channels), alder and willow stands in dry or active stream channels, and fairly open tussock meadows. I found an average of 27 vascular plants per plot. The phenology of the vascular plants was on par for this time of year and these habitats: most plants were in flower or very early fruit. *Ledum spp., Vaccinium uliginosum, V. vitus-idaea, Oxycoccus microcarpus, Lupinus arcticus, Hedysarum alpinum, Tofieldia pusilla, Andromeda polifolia,* and *Picea glauca* were all flowering. Bumblebees were quite prevelant on the ericaceous and fabaceous plants. *Vaccinium uliginosum, V. vitus-idaea, Empetrum nigrum, Geocaulon lividum, Lupinus arcticus, Arctostaphylos rubra,* and *Salix spp*. were starting to fruit.

When we returned to Upper Caribou in July *Lupinus arcticus* was in full fruit and *Vaccinium uliginosum* berries were ripe. I spotted *Moneses uniflora* flowering at plot 14, where in June I had thought only *Orthilia secunda* was growing there.

GENERAL NOTES ON PLOT-WORK AND OBSERVATIONS:

I collected 71 vascular plant specimens from the Upper Caribou mini-grid (Table 1). Dave collected 104 nonvascular plants (Table 1). The number of the first photo taken at Upper Crescent was 1000024 and the last number was (Table 1). Dave collected soil samples from every plot visited. Brandon cored at least 1 tree at all plots save the three plots that had no trees or saplings (1-lake, 3-road and 22-thick *Betula occidentalis*). Many of the larger trees had rotten cores. Only 5 plots did not have any saplings and 10 plots contained no trees.

Table 1. Collection series for the Upper Caribou mini-grid.

Collector	Identifier	Series
Nicklen	Vascular plants	EFN-09-001 – 058, 234-246
Gottung	Photos	1000024-1000323, 1000928, 1000941
Kofranek	Nonvascular collections	4494-4595, 4834-4835

Wildlife: We saw quite a bit of moose and caribou scat at this mini-grid as well as several antlers. The willows were heavily browsed by both hare and moose. We found the majority of hare pellets under fairly open grown spruce that had thick branches down to the ground. At camp we regularly heard some very polite gray jays (as opposed the well fed and aggressive jays at my cabin!) and saw a small swimming rodent in the boggy pond.

ACTIVITES:

Wednesday, June 17

On Wednesday we traveled from Copper Center to the Upper Caribou mini-grid and sampled one point. We began the day at 8:30 by packing up the sampling gear into Brandon's and my personal backpacks for easier transportation. At 10:00, when all the gear was loaded into the suburban and we located our two drivers (Don and Heidi), we took off to Slana. We arrived at the Slana Ranger Station around 11:40, ate lunch and waited to meet up with our volunteer hikers. We borrowed an extra backpack from Mike Thompson, Slana ranger, and filled it with more sampling gear and bear barrels. We met the volunteers at the Freed cabin and all drove to the Upper Caribou Trail head. Mike Thompson also helped hike some of our stuff out.

Since we had passed the Caribou Creek sign on the road, I thought we were east of the center of the mini-grid, but we were actually still west of the mini-grid. This slight confusion was not helped by the fact that Brandon, Dave and I were carrying heavy packs and the volunteers and Heidi had lighter packs and the mentality of hiking fast down the trail. It was difficult to keep these zealous hikers going in the right direction especially when the right direction was off the trail and into rather thick willow.

Figure 4. Cook spot at Upper Caribou mini-grid. Ephemeral puddle in gully behind us.

When we got close to point 14 and there was a very clear puddle of water surrounded by moss and some large spruce trees, we dropped our packs (Figure 4). The mosquitoes were quite bad and the volunteers, Heidi and Mike wasted no time getting back to the trail. We found an open boggy meadow for our tents and snuggled ourselves between some tussocks.

Once our camp was set up, it was about 4pm and we decided to do point 13. The plot is west of the main Caribou Creek and in the buffer zone of alder and tall spruce surrounding the creek corridor. Since it was our first point of the year and it was an alder rich plot, things did not go smoothly. The plot took over 4 hours and we did not finish until 9:50pm. It took us 30 minutes to pack up and walk back to camp.

Weather: The day was partly cloudy and in the upper 50s. There was little wind and the mosquitoes were moderately bad.

Thursday, June 18

On Thursday we headed west to the trail in the morning and took the trail north to point 24. On the trail we ran into Patrick, seasonal archeologist, Meg Jenson and Mike Thompson on their way to check out the site for the new cabin being built at the trail's end. Point 24 is just several meters west of the trail. The plot is in spruce woodland with a thick understory of *Betula nana*. After lunch we walked west to point 25; it is a quick easy walk that crosses a nice bog where you would have a great view of Sanford if it was not cloudy. Point 25 is also in a spruce woodland, but the understory is more dominated with horsetail (Figure 5). Both of these plots took us just over 3 hours. We were back to camp by 6:30pm.

Weather: Mostly cloudy all day with a few stray sprinkles. Temperatures were in the mid-fifties.

Figure 5. Plot 25 of Upper Caribou mini-grid looking south.

Friday, June 19

On Friday we sampled points 3, 1, 6, and 2. In the morning we hiked west to the trail and took the trail down to the road to point 3, which is right in the center of the road. We could have sampled it, but two main things dissuaded us: we would not be able to install the center monument and it would be difficult when a car passed through to continue sampling. We would have gotten some roadside vegetation at the ends of the transects, but nothing in the quadrats (Figure 6). We took a center point and did a grid point.

Figure 6. Plot 3 of Upper Caribou. Arrow points to plot center where we temporarily placed a monument head.

After this we continued down the road meaning to cut in towards point 2, but the road was such fast walking that we overshot 2 and went to point 1. Plot 1 is located on the edge of a lake (Figure 7). We did not sample this point, which was a mistake: it should definitely be sampled during the next sampling iteration, and crews should be prepared to wade into the water in the strand vegetation around the pond. Later in July, when it was a little drier, we did come back and sample the drier half of this point. After completing the grid point at 1, we walked up a hill to plot 6, which is located in a tussock bog dominated by *Eriophorum vaginatum* with a few scattered white spruce saplings. After completing this plot we headed southwest to plot 2. This required us to walk down and cross a wetland valley and up and down a small hill whose south side has a few birch trees (yellow in imagery). Plot 2 is at the base of this hill is an open tussock bog with no trees or saplings. We were back to camp by 7:30.

Figure 7. Plot 1 of Upper Caribou Creek mini-grid is located in standing water by this lake.

Weather: Rainy in the morning with some clearing while we were at plot 6. At plot 2 the temperature dropped drastically (55° F to 44°F) and we had a very cold thunderstorm with heavy rain.

Saturday, June 20

On Saturday, we completed points 21 and 22. We left camp at 8:30 am for point 21, which is located on a steep birch-alder slope with some open grown spruce. We found a good number of hare pellets at this plot. After lunch we headed to plot 22. This plot has extremely thick *Betula occidentalis* and *B. nana* (Figure 8). We were back to camp by 6pm.

Figure 8. Thick *Betula occidentalis* at plot 22 of Upper Caribou mini-grid.

Weather: We had drizzle in the morning. It cleared a little while we were sampling point 22, but then poured while sampling point 21. Similar to the weather on Friday, the temperature dropped about 10 degrees F when the heavy rain started. By evening the rain had stopped and the temperature was in the low forties with a breeze.

Sunday, June 21

Sunday we sampled points 20, 15, and 14. We left camp at 8:30 and headed west to the trail, which we took just a little way until we headed west again to point 20. Point 20 is in a dry tussock bog with a good number of lichens. After lunch we headed south to plot 15. This is an open mixed spruce forest with a high diversity understory (38 vascular plants) for a lowland forest plot. There is a range of plants species from those found in bogs as well as those found in drier habitats. We set up the transect tapes wrong here and didn't realize it until we had finished the transects and started the quadrats. The E-W transects were set up backwards and sampled from east to west. The N-S transects were sampled correctly. After this plot, we headed east to plot 14, which is in an old stream corridor or seasonal stream bed. It is a tall alder-willow plot with spots of open gravel and rocks on the forest floor and moderately high diversity for vascular plants. From 14, was a very quick 250m walk north to our camp. We were back by 9:30pm.

Weather: Our first totally sunny day! Cool in the evening.

Monday, June 22

This day we sampled points 16 and 11. We left camp at 8:30 and headed west and skirted north around a lake to point 16. Point 16 is in a white spruce woodland bordering on open low dwarf birch scrub. This plot has 38 vascular plants with some drier habitat plants like *Festuca altaica* as well as cooler mesic habitat species such as *Polygonum viviparum*, *Salix reticulata*, and *Plantanthera obtusata*. After lunch we headed south to point 11, which is a low diversity dwarf birch-willow-graminoid plot. There was a small, gray, non-descript dead bird in this plot.

Weather: Overcast most of the day. At point 11 low clouds and high clouds were moving quickly in different directions and we geared up for rain, which held off until night.

Tuesday, June 23

Because it was cold and poured all night and was still raining very hard in the morning, we decided to do some plots that would allow us to take the trail most of the way. After breakfast we folowed the trail south to the road and then went east a little way and cut off southeast towards point 4. Whatever bushwhacking we saved by taking the trail was made up for in plot 4. It is a thick tall alder-willow plot that is very difficult to move around in (Figure 9).

Figure 9. Thick, tall alder and willow at plot 4 of the Upper Caribou mini-grid.

The fact that it was 33°F and sleeting did not help matters. The plot took a very long time to sample: 4 hours! We did not want to spend any more time at point 4, so at 1:30 we hiked to point 5 and ate our lunch. Point 5 is in a tussock bog with *Salix pulchra*, *Betula nana* and scattered white spruce.

Weather: Hard rain in the morning that turned to sleet. There temperature reached a low of 33°F. The sleet gradually turned back to rain and by about 2pm the rain slowed. By 4pm the rain had stopped the clouds lifted and we could see a very low snow line. It looked to be at or lower than 4000 ft. It was a cold night.

Wednesday, June 24

Wednesday we sampled plots 12, 7 and 8. At 8:30 we started hiking east to point 12, which is dominated by tall *Betula occidentalis*, willow and alder. After this plot we hiked towards point 7 until we were in the sun and had a great view of Sanford. We ate lunch between 12 and 7 (Figure 1). Point 7 is a nice open low scrub plot with a decent amount of lichens in the open patches. It is only a 20 minute walk from 7 to 8. Point 8 has quite low diversity and very thick *Betula occidentalis*. From this plot we could see Sanford and Wrangell. Brandon saw what he

thought was a stream of smoke from Mt. Wrangell. It was gone by the time I got to the backpacks/view point. We were home by 8:45pm.

Weather: It was cold in the morning with a little bit of hail and snow. The skies quickly cleared, but the temperature remained chilly until about mid-morning. The rest of the day was clear and warm with beautiful views of Sanford and Wrangell.

Thursday, June 25

On Thursday we sampled plots 17, 23, and 18. We left camp at 8:30 and headed to point 17, which is located on a slope east of two creeks and contains moderately thick dwarf birch, willow and spruce saplings. The white and black spruce appear to hybridize here. There are some sphagnum areas in this plot that look perfect for black spruce, but distinguishing sapling species was difficult (Figure 10). We finished sampling 17 at noon, ate lunch and had a quick walk to 23. Plot 23 is a mostly open graminoid area with a couple moist patches and some tall scattered spruce trees and willow. We finished this plot at 4pm and headed to plot 18. Plot 18 is a mix of open grown white spruce, dwarf birch and willow. We completed this plot at 7pm. We finished each plot in about 3 hours, which seemed to be our fasted rate at this mini-grid. None of these 3 plots were terribly brushy.

Weather: It was clear and quite warm (mid-60s) until around 4pm when the skies clouded over and we had some sprinkles. It remained cloudy and then began to rain very hard overnight. The white-socks were voracious at plot 23.

Figure 10. Fleur checking white spruce-black spruce hybrids at plot 17 of Upper Caribou.

Friday, June 26

We had planned on sampling plot 19 (250 m N of our camp) on our last day before hiking out. We were hoping for good weather for this last plot and for packing up camp, but it started to rain

very hard overnight and became quite chilly. At breakfast Brandon and I huddled over the warm water in the closed cook tent and thought of all the positive things we could about the cold, pelting rain. As we left the cook tent the rain turned to sleet and we thought we saw snow, but decided it couldn't possibly be snow. As we headed to point 19, it was definitely snowing, but we were still determined to get this point done. After only 100 meters of walking the snow was really coming down and starting to stick to the ground, but we were still determined. I found the center and installed the monument. At this time we realized we could not sample. I couldn't see some of the vascular plants and Dave certainly could not see the lichens or mosses (Figure 11).

Figure 11. Fleur taking a center point at plot 19 of Upper Caribou on June 26 before deciding not to sample the point due to snow accumulation.

We headed back to camp and radioed to Slana to see if our volunteers could come a little early to help us hike out. We packed up our tents and gear in the sopping wet and freezing cold as best we could and were careful to not lose anything under the accumulating snow. At this point we had about 4 inches of snow! All of the willows and trees were bent low under the weight. We hiked our first load of gear out to the road and met up with the two volunteers and an SCA. They hiked in with us and helped us carry out the rest of our gear in an assortment of personal and loaned backpacks. Dave, Brandon and I squeezed our wet and bundled bodies into the back seat and the husband and wife volunteers doubled up in the front seat as we drove back to Slana to meet Miranda and Todd, who would drive us back to Copper Center. Once back at Copper Center we opened up all the tents and sleeping bags and wet sampling gear in one of the half renovated cabanas to dry out. We met up with Paul Atkinson and set up our computers and finally went out for some Grizzly Pizza!!

Weather: We experienced cold, heavy rain overnight that turned to sleet in the morning. Heavy snow was falling by 8:30 and 4 inches had accumulated by 10:30. The snow continued to fall until we reached the Slana Ranger Station (below 2500 ft).

Tuesday, July 21

After we had finished all of the points not sampled in 2007 at Boyden Hills, we had some extra time and decided to finish the Upper Caribou mini-grid. We finished point 8 at Boyden Hills, ate lunch, hiked out Boyden Creek to the park vehicle we had during the Boyden sampling trip and drove to Upper Caribou. Since the day was half over, we chose to sample one of the closest points to the road at Upper Caribou: point 10. Point 10 is an open stunted spruce woodland with *Eriophorum* tussocks (Figure 12).

Once finished with point 10 at Upper Caribou, we headed back to our camp at Boyden Hills at 7:30pm. It was Dave's 40th birthday and Brandon and I had secretly stashed 4 beverages as a surprise. We had a good evening celebrating.

Figure 12. Plot 10 at Upper Caribou mini-grid. Similar to points 5, 2, 20, and 6

Weather: Clear and warm. The smoke that had been lingering since the beginning of July was a little lighter today.

Wednesday, July 22

We left our Boyden camp at 8am and drove back to Upper Caribou to sample point 19 and 9. We had last seen plot 19 in the snow when the lupin were in full flower (Figure 11) and now it was warm and the lupin were in full seed. Point 19 is a tall open white spruce forest in an old streambed that is more productive than the surrounding areas. After we ate lunch we headed to point 9, which is a tall white spruce woodland (Figure 13). It is generally undiverse except for a small gully in the west edge of the plot that contains some plants that prefer mesic habitats. I

could not turn on the Trimble at this point so took the center point with the garmin We finished both plots quite quickly and were back to camp by 5pm. At camp I tried to charge the Trimble with the camcorder batter to no avail: the orange charging light came on, but the Trimble did not.

Figure 13. Tall white spruce woodland at plot 9 in the Upper Caribou mini-grid.

Weather: Warm and Sunny. Not too smokey.

Thursday, July 23

We had a choice of plots and mini-grids on this day. We could hike in 6 miles to the Trail Creek mini-grid to complete plot 20 or we could go back to Upper Caribou and try point 1 again in hopes that the lake had dried somewhat. Given that we were uncertain about which mini-grid we were going to for our next trip (since Louise Lake was on fire) and we might need some extra time to figure this out, and that the hike into Trail Creek was quite long for one point that likely was not very different from the rest of the points in the mini-grid, and that the lake plot at Upper Caribou would likely have new and interesting plants, we chose to sample point 1 at Upper Caribou. This plot did offer a several new vascular plants and mosses we had not seen yet this summer: several different *Carex spp*., *Menyanthes trifoliata*, *Drosera rotundifolia* (Figure 14), and likely a *Scorpidium sp*. of moss. I took the center point with the Garmin GPS unit at this plot. Note that the center monument was not particularly stable in the soft, wet organic matter by the lake.

We headed back to Copper Center a day early. Once back we uploaded the data, began downloading the photos, and attempted to turn the Trimble on again. The next day the Trimble, after sitting on its cradle all night, turned on and I was able to upload the GPS points. These points ended up being quite imprecise with errors of 10m. We organized all of the sampling gear and prepared for our next trip.

Figure 14. *Drosera rotundifolia* found at plot 1 of Upper Caribou mini-grid.

CONCLUSIONS AND FUTURE CONSIDERATIONS:

This mini-grid is logistically simple to access and sample and offers easy hiking and navigation. Because the study area is so accessible, there are at least two good camping areas: the spot we chose as well as the main Caribou Creek drainage. The diversity is moderate to low. Because it is southwest facing it is a good mini-grid to sample first in the season (though I would have missed *Moneses uniflora* if we had not gone back in July). The mini-grid is quite brushy in some areas, either with thick *Betula nana* and *B. occidentalis* or tall alder and willow. This aspect combined with the high number of trees can slow down the sampling time. But there are also 5 open, boggy plots that are quicker to sample.

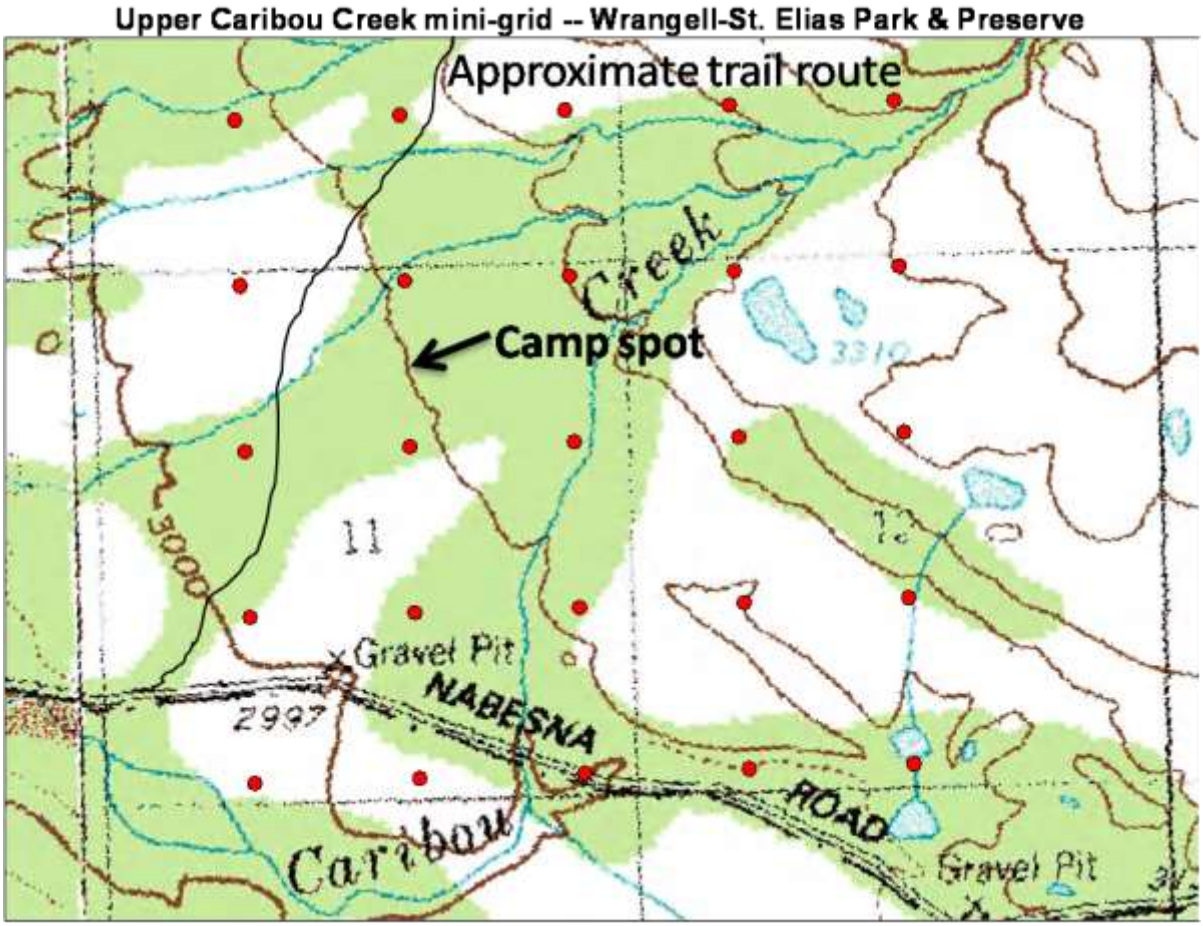

Figure 15. Map of the Upper Caribou mini-grid. Our camp was located between points 14 & 19.

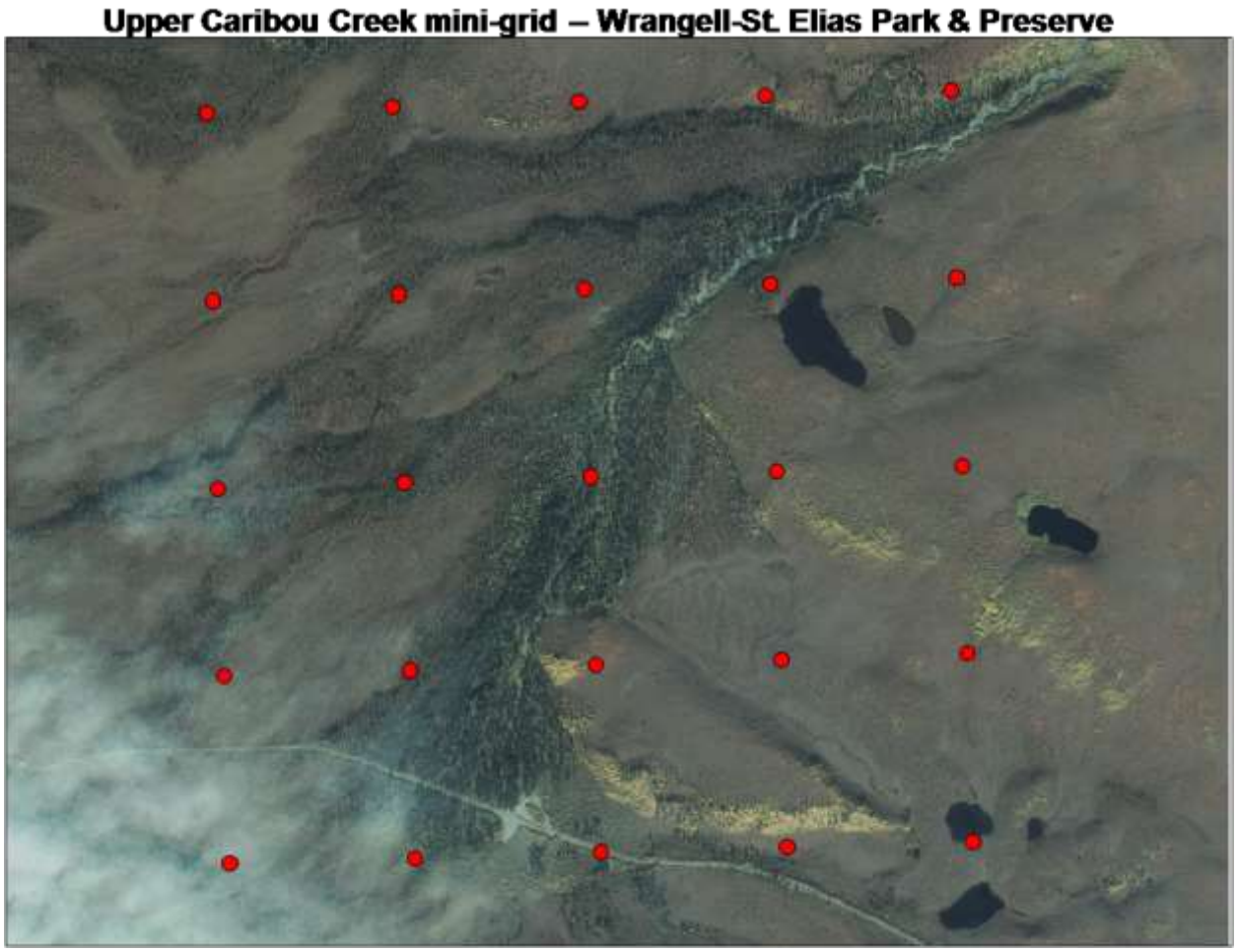

Figure 16. Image of Upper Caribou mini-grid (likely taken in fall—yellow on south ridges are areas with birch trees.

REFERENCES CITED:

Roland, C.A., Oakley, K., Debevec, E. & Loomis, P. (2005) Monitoring vegetation structure and composition at multiple spatial scales in the Central Alaska Network. National Park Service, Central Alaska Network, Final Monitoring Protocol.